

*Statewide Standard Treatment Protocol*

**Delaware**  
**Basic Life Support Protocols,**  
**Guidelines**  
**and**  
**Standing Orders**  
**For**  
**Prehospital and Interfacility Patients**



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**State of Delaware**  
**Department of Health and Social Services**  
**Division of Public Health**  
**Office of Emergency Medical Services,**  
**Statewide Standard Treatment Protocols**  
**And**  
**Basic Life Support Standing Orders**



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This treatment protocol for basic life support has been adopted and is enacted by the State Fire Prevention Commission pursuant to Delaware Code, Title 16, Chapter 98, Section 9802 (24).

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## **INTRODUCTION AND EMT STANDARD OF CARE**

### **Delaware Emergency Medical Technician (EMT) Protocols**

#### **Issued by the State of Delaware EMS Medical Directors In cooperation with the Delaware State Fire Prevention Commission and The Office of Emergency Medical Services**

The Delaware Emergency Medical Technician protocols and the standing orders contained within have been developed as an adjunct to the standards of care as contained in the United States Department of Transportation Educational Standards and verified through the National Registry of Emergency Medical Technicians certification process.

All Delaware certified EMS providers administering patient care are doing so under the provisions of the State EMS Medical Director's medical license in accordance with Del Code Title 16, Chapter 98 Section 9802.

These protocols are not all-inclusive. They address in particular those patients for which EMTs may assist with previously prescribed medications such as nitroglycerin, invasive procedures such as automatic external defibrillation, and complex clinical situations such as refusal of treatment which the EMS medical directors have chosen to address through protocols as reinforcement to standard EMT training.

Deviation from standing orders may be undertaken only by direct order from an approved base station physician serving as Medical Control Physician within a Delaware Office of EMS approved facility or by a State of Delaware EMS medical director directly involved in the care of the patient.

"Any person, agency, organization or entity who knows or in good faith suspects child abuse or neglect shall make a report in accordance with § 904 of this title (Title 16 of Delaware Code). For purposes of this section, "person" shall include, but shall not be limited to, any physician, any other person in the healing arts including any person licensed to render services in medicine, osteopathy or dentistry, any intern, resident, nurse, school employee, social worker, psychologist, medical examiner, hospital, health care institution, the Medical Society of Delaware or law enforcement agency." **Child Abuse Reporting Phone Contact: 1-800-292-9582**

Any person having reasonable cause to believe that an adult person is infirm or incapacitated as defined in § 3902 of this title (Title 39 of Delaware Code) and is in need of protective services as defined in § 3904 of this title shall report such information to the Department of Health and Social Services. **Division of Services for Aging and Adults with Physical Disabilities (DSAAPD): 1-800-223-9074.**

All certified EMS providers, involved with patient care, are equally responsible for assuring the patient(s) receives appropriate medical care.

**Patient** - A patient is individual who is sick, injured, wounded or otherwise incapacitated or helpless and/or seeks immediate medical attention for whom EMS has been activated.

**Patient Priority:**

- |                     |   |
|---------------------|---|
| <b>Priority I</b>   | Patient suffering from an immediate life or limb threatening injury or illness.                                 |
| <b>Priority II</b>  | Patients suffering from an injury or illness that if left untreated could potentially threaten life or limb.    |
| <b>Priority III</b> | Patient suffering from an injury or illness that requires medical attention but does not threaten life or limb. |

**EMT Minimum skills and procedures:**

1. Patient assessment (primary and secondary surveys)
2. Patient assessment - using the pediatric assessment triangle for general impression
3. Use of body substance isolation (BSI)
4. Obtaining vital signs including temperatures
5. Scene assessment and notification responsibilities in suspected abuse cases
6. Airway control (manual)
7. Use of airway adjuncts (nasopharyngeal, oropharyngeal airways and others)
8. Spine immobilization/stabilization
9. Cardio-pulmonary resuscitation
10. Bleeding control and shock management
11. Splinting of fractures and dislocations
12. Use of suction equipment
13. Application of oxygen delivery devices
14. Vaginal delivery
15. Use of tourniquets and approved hemostatic agents
16. Use of approved mechanical chest compression device
17. Assist with nitroglycerin
18. Assist with bronchodilator
19. Assist with Aspirin
20. Use of medication auto-injectors
21. Measurement of blood glucose and administration of oral glucose
22. Administration of defibrillation
23. Pulse oximetry and CO-oximetry
24. Monitor IV fluids
25. Use of an approved continuous positive airway pressure devices (CPAP). (Optional)
26. Use of length based color coded resuscitation tape for age appropriate treatments (Broslow tape®)
27. Use of an approved carbon monoxide detector

### **Requesting Advanced Life Support (ALS) Requirements:**

If at any time during contact the patient begins to show signs of worsening, an Advanced Life Support (ALS) unit should be considered.

Basic Life Support (BLS) should request an ALS provider when the patient's needs exceed their capabilities. These conditions may include but are not limited to:

- Altered level of consciousness
- Allergic reaction with difficulty breathing or swallowing, altered level of consciousness, or known previous reaction; hives within 5 minutes of exposure.
- Cardiac symptoms
- Cardiac arrest
- Diabetic problem (not alert and/or abnormal breathing)
- Multi-system trauma or severe single system trauma
- OB/GYN (imminent delivery, 2<sup>nd</sup> or 3<sup>rd</sup> trimester bleeding or miscarriage)
- Overdose/poisoning (associated with any other categories on this list)
- Respiratory distress
- Respiratory arrest/failure
- SIDS
- Seizures/convulsions (Status or trauma related)
- Entrapment with injuries that meet trauma triage criteria
- Severe blood loss
- Shock (Hypoperfusion)
- Stroke/CVA symptoms
- Syncope (associated with any other categories on this list or cardiac history)
- Unconsciousness
- Abnormal vital signs for that particular patient

If transport time by BLS to an appropriate receiving facility can be accomplished before ALS can initiate care, then the BLS service should transport as soon as possible.

BLS services should not delay patient care while waiting for ALS personnel. If ALS arrival at scene is not anticipated before initiation of transport, arrangements should be made to rendezvous with the ALS service.

### **Transport Requirements:**

Respond to EMS call in accordance with the currently approved Priority Medical Dispatch (PMD) Protocols.

Transport shall be made in a safe manner as to prevent further injury. Utilize lights and siren as appropriate based on patient condition.

- It is the consensus of the EMS medical directors that during transport to the hospital, the use of lights and sirens is not *medically indicated* for the majority of EMS patients.
- However, if paramedics are not present for priority I and/or priority II patients, lights and sirens may be medically indicated and appropriate usage may be considered.
- It is in the best interest of patient care that the highest medically trained practitioner should determine the appropriate mode of transport based on patient condition.

Transfer the patient to ambulance using the most appropriate means necessary while not exacerbating the patient(s) symptoms.

Secure patient in ambulance using appropriate equipment per ambulance and stretcher design. Agency standard operating procedures should meet or exceed manufacturers' recommendations and any applicable Delaware State Fire Prevention regulations and Delaware law.

The medical directors encourage providers to use safety restraints while the ambulance is in motion.

Transport patient to an appropriate medical facility via appropriate mode of transportation without delay.

- Patient care is enhanced by transport to a facility of prior treatment and the patient's, family's, or personal physician's choice should be strongly considered.
- If the patient's wishes are in conflict with existing protocol (e.g., trauma, OB, or stroke/STEMI) the appropriate destination should be chosen. The medical control physician is the final determinant if assistance is needed.
- Patient care does not end until transfer of care of the patient to appropriately trained health care provider.

At the time of patient delivery to an approved healthcare facility, the EMT must give a verbal report to a physician, physician assistant, or nurse at the patient's bedside (a triage desk report is appropriate if patient's disposition is to hallway or waiting room).

### **Documentation Requirements:**

An essential part of prehospital medical care is the completion of a Patient Care Report (PCR). The PCR provides written documentation of patient condition and treatment for medical and legal purposes. EMS personnel shall be responsible for providing clear, concise, complete and accurate documentation.

EMS providers must complete, without exception, a State of Delaware PCR on each patient contact, and shall document all relevant findings, and treatments.

Every attempt shall be made to complete the PCR prior to leaving the receiving facility.

- In the absence of extraordinary circumstances a PCR should be submitted to the receiving facility within four (4) hours of patient disposition.
- EMS providers must complete and submit a PCR to the receiving facility prior to going off duty and within 24 hours.
- Only EMS calls that are originally dispatched as "service call or public assist" can be entered into the EDIN system as such.

Completed PCR is also necessary to identify EMS providers in the event of a potential infectious disease exposure

### **Use of Quality Assurance/Quality Improvement (QA/QI) Requirements:**

Quality Assurance/Quality Improvement (QA/QI) measures must be compliant with the established Delaware State Fire Prevention Commission QA/QI Committee detailed in the State of Delaware's Ambulance Regulations and approved by the State BLS EMS Medical Director and State EMS Medical Director.

### **EMT/TELEPHONE REPORT GUIDELINES**

The EMT report to medical control should be brief and concise. The goal is to provide enough vital information to medical control so that they may provide informed direction for the patient's continued care and plan for the patient's disposition. Reports generally should not exceed thirty (30) seconds in duration in order to provide economical use of time by the EMT, the medical control physician, and nursing personnel.

For Priority I patients call online medical control utilizing the following report format:

- BLS unit number
- Specific notification (Trauma Alert, Trauma Code, Cardiac Arrest, Stroke Alert, CPAP, etc.)
- Estimated time of arrival.
- Priority.
- Patient age.
- Patient sex.
- Chief complaint and related past medical history (i.e., patient with chest pain, history of MI and CABG or patient with altered mental status and history of insulin dependent diabetes).
- Vital signs.
- Significant physical findings (i.e., patient with shortness of breath found to have wheezing and to be hot to the touch, or the patient complaining of leg pain who has deformity of the mid thigh without distal pulses).
- Care rendered.
- Response to care.

For hospitals that prefer radio reports regarding BLS patients who are a Priority of II or III and are being treated by standing orders with no anticipated requests for orders, the following brief report format is acceptable:

- BLS unit number.
- Priority.
- Patient age.
- Patient sex.
- Chief complaint
- Standing Order being followed
- Estimated time of arrival

The above information should be more than adequate for most BLS runs. When additional information is felt to be important for patient care or disposition, the medical control physician is well within their jurisdiction to request more information.

## **GENERAL PATIENT CARE ~ Adult**

**INDICATIONS:** Any patient, who is greater than or equal to the age of 12 years, requiring prehospital medical evaluation by a prehospital health care provider in the State of Delaware.

The General Patient Care protocol will be followed in conjunction with all other applicable protocols.

A patient is individual who is sick, injured, wounded or otherwise incapacitated or helpless and/or seeks immediate medical attention for whom EMS has been activated.

The most current version of the American Heart Association Guidelines for Cardiopulmonary Resuscitation is considered the standard for CPR within these protocols.

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- Perform scene survey. Delaware EMS Medical Directors recommend that all EMS crews carry "room" carbon monoxide detectors with an audible alert on their first- in bag for provider and patient protection.\*
  - Observe body substance isolation (BSI) precautions.
    - Follow your agency's infection control policy and Infection control protocol.
  - Consider the need for additional resources.
  - Determine responsiveness using AVPU (alert, verbal, painful, unresponsive).
  - Manage cervical spine as needed. Consider entry into a selective spinal immobilization protocol
  - Evaluate **A**irway, **B**reathing, **C**irculation, and **D**isability, **E**xposing the patient as necessary.
    - Secure a patent airway as needed.
    - Administer oxygen as per appropriate.
  - Treat all life threatening conditions as necessary.
  - Evaluate blood pressure, pulses, respiratory rate and GCS (Glasgow Coma Scale). Evaluate temperature if thermometer is available. Reassess with a frequency indicated by patient condition.
  - Monitor the patient via the use of a pulse oximeter as appropriate.
  - Monitor blood glucose level as appropriate

- Obtain SAMPLE history (signs/symptoms, allergies, medications, pertinent history, last oral intake, events leading up to illness/injury).
- Perform primary physical assessment.
- Assess pertinent body systems as appropriate.
- Assess and record pain severity, if applicable, using age appropriate pain scale (see appendix B).
- Use CPR assist devices as appropriate\*\*
- Assign treatment priority and make a transport decision.
- Consider proposed receiving facility's diversion status and inform patient (family) as appropriate.
- Patients should be taken to the approved facility's emergency department, labor and delivery area or to an inpatient bed if arranged prior to arrival at the facility. If there are questions or doubts as to the appropriate facility or point of delivery, the medical control physician will be the arbitrator. All unstable patients should be transported directly to a Hospital Emergency Department.
- Patients are to be transported to Delaware Office of EMS approved facilities within the EMS agency's usual operations area.
- On scene direction of medical care is provided by the Delaware EMS provider with the highest level of licensure and/or certification.
- Contact medical control as needed. Document medical control physician number and any orders on the patient care report.
- During transport continue with secondary assessment and note any changes in the patient's condition.
- Responsibility of care does not end until transfer of care of the patient to an appropriately trained health care provider is completed.
- It should be noted that the protocol above is a guideline to be followed in as much as it aids in providing appropriate and timely medical care. The EMT provider may change the order or omit steps listed above as dictated by sound judgment of the care provider and/or presentation of the patient(s).

*"Any person, agency, organization or entity who knows or in good faith suspects child abuse or neglect shall make a report in accordance with § 904 of this title (Title 16 of Delaware Code). For purposes of this section, "person" shall include, but shall not be limited to, any physician, any other person in the healing arts including any person licensed to render services in medicine, osteopathy or dentistry, any intern, resident, nurse, school employee, social worker, psychologist, medical examiner, hospital, health care institution, the Medical Society of Delaware or law enforcement agency."*

**Child Abuse Reporting Phone Contact:1-800-292-9582**

*Any person having reasonable cause to believe that an adult person is infirm or incapacitated as defined in § 3902 of this title (Title 39 of Delaware Code) and is in need of protective services as defined in § 3904 of this title shall report such information to the Department of Health and Social Services.*

**Division of Services for Aging and Adults with Physical Disabilities (DSAAPD): 1-800-223-9074.**

\*CO-oximetry may be performed as an option by agencies carrying CO monitoring equipment.

\*\*CPR assist device must be an FDA approved device approved for use by the Delaware Office of Emergency Medical Services and coordinated with the county EMS medical director and county paramedic service.

## **GENERAL PATIENT CARE ~ Pediatric**

**INDICATIONS:** Any patient, who is less than the age of 12 years (neonates are considered birth – 30 days old), requiring prehospital medical evaluation by a prehospital health care provider in the State of Delaware.

The General Patient Care protocol will be followed in conjunction with all other applicable protocols.

A patient is individual who is sick, injured, wounded or otherwise incapacitated or helpless and/or seeks immediate medical attention for whom EMS has been activated.

The most current version of the American Heart Association Guidelines for Cardiopulmonary Resuscitation is considered the standard for CPR within these protocols.

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Perform scene survey. \*Delaware EMS Medical Directors recommend that all EMS crews carry “room” carbon monoxide detectors with an audible alert on their first- in bag for provider and patient protection.\*\*

- Observe body substance isolation (BSI) precautions.
  - Follow your agency’s infection control policy and Infection control protocol.
- Consider the need for additional resources.
- Determine responsiveness using AVPU (alert, verbal, painful, unresponsive).\*\*\*
- Appropriately manage cervical spine as needed.
- Use a systematic approach to a pediatric assessment. General assessment should be done using the pediatric assessment triangle (PAT). Components of the pediatric assessment triangle include: (see appendix B)
  - Appearance
  - Work of breathing
  - Circulation
- Appearance includes: muscle tone, consolability, look or gaze, and speech or quality of cry, overall mental status. (enlist the parents or caregivers in determining what is normal for the child).
- Work of breathing: airway sounds, signs of increased breathing, use of accessory muscles and increased or declining respiratory effort.
- Circulation: assessed by observing pallor, mottling, cyanosis, presence and quality of peripheral or central pulses.

- After using the PAT, proceed to a primary assessment:
  - Airway for patency.
    - If epiglottitis or croup is suspected, transport sitting straight upright to assist with clearing of respiratory secretions. Do not attempt to examine upper airway or otherwise aggravate the patient.
    - Secure an airway as needed and appropriately.
  - Breathing for respiratory effort and quality.
    - Administer oxygen as appropriate.
  - Circulation for pulse rate, skin temperature and capillary refill.
- Expose the patient as needed for assessment needs.
  - Keep in mind that pediatric patients are prone to hypothermia faster than their adult counterparts. Maintain a warm environment and keep exposure to a minimum.
- Treat life-threatening conditions as necessary.\*\*\*\*
- Evaluate blood pressure, pulses, respiratory rate, GCS (Glasgow Coma Scale) and tactile temperature: if available use thermometer to take an accurate temperature. (refer to appendix B for normal vital signs chart for pediatrics, or a Broslow tape).
- Reassess with a frequency indicated by patient condition.
- Monitor the patient via the use of a pulse oximeter as appropriate.
- Monitor blood glucose level as appropriate.
- If no life threat has been determined in the primary survey, proceed to a secondary survey that will include a focused medical history using the SAMPLE mnemonic and thorough physical exam.
- Assess and record pain severity, if applicable, using age appropriate pain scale (see appendix B).
- Assign treatment priority and make transport decision.
- Consider proposed receiving facility's diversion status and inform patient (family) as appropriate.

- Transport patient to an appropriate medical facility via appropriate mode of transportation without delay.
- If at all possible, do not separate the parent/caregiver and the child.
- Patients should be taken to the approved facility's emergency department, labor and delivery area or to an inpatient bed if arranged prior to arrival at the facility. If there are questions or doubts as to the appropriate facility or point of delivery, the medical control physician will be the arbitrator. All unstable patients should be transported directly to an emergency facility.
- Patients are to be transported to Delaware Office of EMS approved facilities within the EMS agency's usual operations area.
- On scene direction of medical care is provided by the Delaware EMS provider with the highest level of licensure and/or certification
- It should be noted that the protocol above is a guideline to be followed in as much as it aids in providing appropriate and timely medical care. The EMT provider may change the order or omit steps listed above as dictated by sound judgment of the care provider and/or presentation of the patient(s).

**\*\*CO-oximetry** may be performed as an option by agencies carrying CO monitoring equipment.

**\*\*\*Pediatric emergencies** are influenced by the unique anatomical features, immature physiology, and variable developmental achievements of children. EMTs must know normal pediatric presentations for each age group in order to determine what is abnormal, and what to expect for treatments provided in an emergency situation.

**\*\*\*\*Characteristics of life-threatening illnesses** in the pediatric population may include combinations of the following:

- Initial subtle signs of illness that progress to a condition that requires emergent interventions
- Relatively rapid in onset with precipitous deterioration
- Frequent involvement of the respiratory or central nervous system
- Require rapid intervention
- Necessitate care at a pediatric tertiary care center

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**Child Abuse Reporting Phone Contact:1-800-292-9582**

## **INFECTION CONTROL & BODY SUBSTANCE ISOLATION (BSI)**

**INDICATIONS:** These guidelines should be used whenever contact with patient body substances is anticipated and/or when cleaning areas or equipment contaminated with blood or other body fluids.

- These guidelines provide general information related to body substance isolation and the use of universal precautions. These guidelines are not designed to supersede an Emergency Medical Service's Infection Control Policy.
- These guidelines do not comprehensively cover all possible situations, and EMS practitioner judgment should be used when the Emergency Medical Service's Infection Control Policy does not provide specific direction.
- Nothing in this guideline shall be construed to authorize the disclosure of confidential medical information by the health facility or any of the EMS practitioners except as otherwise authorized by law.

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- Wear gloves on all calls where contact with blood or body fluid is anticipated or when handling items or equipment that may be contaminated with blood or other body fluids.
  - Wash hands as often as possible and after every call.
  - Keep all open cuts and abrasions covered with adhesive bandages that repel liquids.
  - Use goggles or glasses when spraying or splashing of body fluids is possible.
  - Respiratory precautions should be used when caring for any patient with a known or suspected infectious disease that is transmitted by respiratory droplets or with someone who has a productive cough.
    - A mask should be placed upon the patient if his/her respiratory condition permits.
  - If an EMS practitioner has an exposure to blood or body fluids, the practitioner must follow the Emergency Medical Service's Infection Control Policy and the incident must be immediately reported to the Service Infection Control Officer.
    - EMS practitioners should clean their wound with soap and water; flush mucous membranes with water/saline; or treat any other wound as dictated by severity of the wound.
    - EMS practitioners who have a confirmed exposure (as confirmed by the Service's Infection Control Officer or Receiving Medical Facility) should be evaluated as soon as possible.

- A State of Delaware Infectious Control Form "*Report of Potential Exposure*" should be filled out and forwarded to the receiving hospital and/or the Chief Medical Examiner/Coroner as soon as possible.
  - EMS practitioners who have been treated for a confirmed exposure should follow through with post-exposure medical care and/or prescribed treatment.
- Thoroughly clean and disinfect equipment after each use following service guidelines that are consistent with the Center for Disease Control recommendations.
- Place all disposable equipment and contaminated trash in a clearly marked plastic biohazard bag and dispose of appropriately.
  - Contaminated uniforms and clothing should be removed, placed in an appropriately marked biohazard bag and laundered/ decontaminated.
  - All needles and sharps must be disposed of in a sharps receptacle unit and disposed of appropriately.

## **REFUSAL OF SERVICE**

**INDICATIONS:** EMTs will often respond to scenes where the patient wishes to decline service. It is important that the provider obtains the patient's informed consent before leaving the scene; otherwise the provider might be exposed to legal liability for abandonment of the patient.

A patient is individual who is sick, injured, wounded or otherwise incapacitated or helpless and/or seeks immediate medical attention for whom EMS has been activated.

*"Refusal of service (ROS) represents a high risk protocol for the patient and the provider. ROS subjects the patient to potential life and health risk and leaves the provider and their agency at risk for legal action. This protocol attempts to reduce risk to all parties."*

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All subjects of an EMS activation should be encouraged to seek care. EMS providers shall avoid dissuading patients (families) from refusing service. Each patient who refuses service must be fully informed about needed treatment and possible outcomes including possible disability or death, and should verbalize understanding of the risks associated with refusing the needed care. If the patient is felt to need treatment, every effort should be made to persuade the patient to consent to needed health care. Consider involving family, police, paramedics, and physician at the hospital. Strongly consider contacting medical control if the provider has any concerns regarding the welfare of the patient. Document the informed consent process, concerns, and if applicable, physician number and any orders on the run sheet and complete the approved State of Delaware refusal of service form.

- Follow general patient care guidelines.
- Take a SAMPLE history. Perform and document a primary and secondary survey. Document the patient's mental status and vital signs. If the provider assessment is refused, document this clearly.

Patients with the following conditions require contact with medical control for refusal of service. All efforts must be made to contact medical control prior to refusal of service.

- Suspicion of intoxication by drugs (prescription or legal) or alcohol, as evidenced by admission of use, odor of alcohol, unsteady gait, slurred speech, or altered mentation;
- Suspicion of suffering acutely from mental disease or have suicidal or homicidal ideation, as evidenced by hallucinations, delusions, agitation, admission or evidence of wish to do harm to self or others, or a concern from others of intention to do harm to self or others;
- Appear to be suffering from a significant head injury as evidenced by loss of consciousness, head trauma, or altered mental status;

- Appear to be suffering from hypoxia or acute respiratory distress as evidenced by abnormal vital signs, increased work of breathing, low oxygen saturation, abnormal lung sounds, or altered mental status;
- Appear to be suffering from hypoglycemia as evidenced by altered mental status, agitation, or unstable vital signs;
- Patients who are disoriented, have abnormal vital signs, or are uncooperative for any reason;
- Any intervention performed by any other healthcare provider
- A summons of EMS to a health care facility or call initiated by a health care provider
- The patient is less than 18 years old.

All patients with the following circumstances require contact with medical control for refusal of service unless paramedics are also present and have obtained a refusal. All efforts must be made to contact medical control prior to refusal of service.

- Document the physician control number and any orders on the run sheet.
- BLS cancels ALS prior to ALS arrival
  - BLS personnel encounter a patient meeting the criteria for ALS care but no ALS is responding;
  - Medical calls dispatched as a Delta or Echo response;
  - Patients who suffer the same mechanism of injury as a Delta or Echo level trauma patient;
  - The provider feels the patient is being physically or emotionally coerced into making a decision against the patients best interests;
- Patients, who **do not meet** the criteria above, may consent to refusal of service.

## **CHEST PAIN**

### **Non-traumatic- Possible Cardiac Origin**

**INDICATIONS:** The pattern of pain suggestive of cardiac origin is highly variable. Chest or epigastric pain associated with shortness of breath, sweating, nausea, vomiting, radiating or non-radiating pain of the neck, jaw, left arm, or back. Patients with chest pain of suspected cardiac etiology require rapid stabilization and transport.

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- Follow general patient care guidelines.
- Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol).
- If the patient has their own aspirin, assist the patient with taking the medication up to 325mg. Patients with allergies to aspirin or non-steroidal anti-inflammatory drugs (NSAIDs i.e., Aleve, Motrin, ibuprofen, etc.) may not receive aspirin.\*
- If the patient has their prescribed nitroglycerin and their systolic blood pressure is greater than 100mm Hg, assist or give the patient nitroglycerin as prescribed. Assess the patient's blood pressure before each dose. The patient should not take nitroglycerin if the systolic blood pressure falls below 100mm Hg. Do not exceed 3 doses given 3 to 5 minutes apart. Further orders must come from medical control.\*\*
- Make sure that the medication prescribed to the patient and has not expired.
- Packaging and safe transport should not be delayed significantly for aspirin or nitroglycerin therapy.
- A paramedic unit must assist with patient care unless the nearest appropriate hospital is closer than the paramedic unit.
- If a paramedic unit is not available, radio a report to the emergency department advising of the estimated time of arrival (ETA) and patient status.
- Contact medical control directly with any questions or concerns regarding nitroglycerin therapy as needed.
- Document on the EMS patient care report the name of the medication, the time(s) of the administration, the number doses taken and document the blood pressure readings before administration.

\*Please refer to a current EMT textbook for a full review of the chest pain patient and assisting with aspirin and nitroglycerin.

\*\*Withhold nitroglycerin and contact medical control if the patient relates taking sildenafil (Viagra® or Revatio®) or vardenafil (Levitra®) within the last 24 hours or tadalafil (Cialis® or Adcirca®) within the last 48 hours.

## **ACUTE RESPIRATORY DISTRESS ~ Adult**

**INDICATIONS:** Signs and symptoms of acute exacerbations of asthma, emphysema, reactive airway disease and allergic reactions may include wheezing, cough, shortness of breath, diminished breath sounds, retractions, tachypnea, and/or air hunger.

Providers will be able to identify the need for albuterol, levalbuterol and Combivent medication treatments and administer it as appropriate.

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- Allow the patient to maintain a position of comfort (usually sitting).
- Follow general patient care guidelines.
- Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol). Consider obtaining a carbon monoxide reading, if greater than 5, apply oxygen.
- Assess lung sounds during the physical examination.
- If a patient has a bronchodilator meter dose inhaler prescribed by their physician, assist the patient as prescribed. Generally, two puffs is the appropriate dosage. Use a spacer if available. The inhaler may be used again in fifteen minutes for a total of 4 puffs. Contact medical control before assisting with additional doses or if the patient took more than 4 puffs within one hour of EMS arrival. \*
- If the patient's pulse rate is over 150 beats per minute, contact medical control prior to a second dose of bronchodilator.
- Not all metered dose inhalers contain bronchodilators. The inhaler should specify that the medication is to be used for episodes of wheezing, shortness of breath, asthma attack, allergic reaction, etc. Make sure that the medication is prescribed to the patient and is not expired.
- If patient's heart rate is less than 150 beats per minute, and if appropriate, assist the patient with their own nebulizer as prescribed by the patient's physician. These include albuterol, levalbuterol and Combivent. Generally the dosage for an adult is 2 unit dose vials poured into nebulizer. Connect nebulizer to an oxygen source at 8 liters per minute and place the nebulizer mouth piece in their mouth or face mask in to position so that the patient is breathing the misted medication.
- If upon arrival patient is currently taking his prescribed nebulizer, it is appropriate to transport the patient while finishing the treatment.
- Restart patient on oxygen therapy at appropriate concentration.
- Reassess patient, especially lung sounds, vitals, and oxygen saturation after each treatment. If minimal relief is obtained, treatment may be repeated once.

- Packaging and safe transport should not be delayed significantly by bronchodilator or nebulizer administration.
- A paramedic unit must assist with patient care unless the nearest appropriate hospital is closer than the paramedic unit.
- If a paramedic unit is not available, radio a report to the emergency department advising of ETA and patient status.
- Contact medical control with any questions or concerns. Document medical control physician number and any orders on the patient care report.
- Document on the EMS patient care report the name of the medication, the time(s) of administration, the number of doses, and pulse rate before administration.

\*Please refer to a current EMT textbook for a full review of acute respiratory distress and administering the above mentioned medication treatments.

## **ACUTE RESPIRATORY DISTRESS/FAILURE ~ Pediatric**

**INDICATIONS:** Signs and symptoms of acute exacerbations of asthma, reactive airway disease and allergic reactions may include wheezing, cough, shortness of breath, diminished breath sounds, retractions, tachypnea, and/or air hunger.

**Acute Respiratory Distress:** a clinical state characterized by increased respiratory rate, and an increased effort represented by nasal flaring, retractions and accessory muscle use. Respiratory distress can be associated with changes in airway sounds, skin color, and mental status.

**Acute Respiratory Failure/Arrest:** a clinical state of inadequate oxygenation, ventilation, or both. It may be characterized by signs of distress or inadequate respiratory effort.

Providers will be able to identify the need for albuterol, levalbuterol and Combivent medication treatments and administer it as appropriate

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- Allow the patient to maintain a position of comfort (usually sitting).
- Follow general patient care guidelines.
- Provide appropriate supplemental oxygen.
- Consider ALS
- Obtain a pulse oximeter reading (see pulse oximeter protocol). Consider obtaining a carbon monoxide reading, if greater than 5, apply oxygen via non-rebreather.
- Perform an initial assessment using the pediatric assessment triangle (see appendix B)
- Be prepared to support ABCs
- Continually reassess respiratory effort
- Keep patient warm
- Complete Airway Obstruction (Foreign body):
  - Open mouth and remove object if visible
  - Reposition the airway and check for ventilation, if not spontaneous, then ventilate the patient.
  - Consider back blows and chest/abdominal thrusts (age dependent)

- Partial Airway Obstruction (Upper airway):
  - Suspect: foreign body, epiglottitis, anaphylaxis, stridor, choking episode, drooling, hoarseness, and/or retractions
  - Avoid any agitation, place child in position of comfort.
  - Consider alternate oxygen delivery methods, such as blow by
  - Do not attempt an invasive airway maneuver
- Reactive Airway Disease (lower airway):
  - Wheezing, grunting, retractions, tachypnea, diminished respirations, decreased breath sounds, tachycardia/bradycardia, and/or decreased level of consciousness
  - Place patient in position of comfort
  - If a patient has a bronchodilator meter dose inhaler prescribed by their physician, assist the patient as prescribed. Generally, two puffs is the appropriate dosage. Use a spacer if available. The inhaler may be used again in fifteen minutes for a total of 4 puffs. Contact medical control before assisting with additional doses or if the patient took more than 4 puffs within one hour of EMS arrival.\*
  - If the patient's palpated pulse rate is over 150 beats per minute, contact medical control prior to a second dose of bronchodilator.
  - Not all metered dose inhalers contain bronchodilators. The inhaler should specify that the medication is to be used for episodes of wheezing, shortness of breath, asthma attack, allergic reaction, etc. Make sure that the medication is prescribed to the patient and is not expired.
  - If patient's heart rate is less than 150 beats per minute, and if appropriate, assist the patient with their own nebulizer as prescribed by the patient's physician. These include albuterol, levalbuterol and Combivent. Generally the dosage for anyone over the age of 8 is 2 unit dose vials poured into nebulizer. Connect nebulizer to an oxygen source at 8 liters per minute and place the nebulizer mouth piece in their mouth or face mask in to position so that the patient is breathing the misted medication.
  - Dosage for children who have a home nebulizer and are age 8 years or younger should be administered as prescribed by the patient's physician. Generally this is one unit dose vial into nebulizer. Connect to oxygen source at 8 liters per minute. Consider using blow by mask on younger patients.
  - If upon arrival patient is currently taking his prescribed nebulizer it is appropriate to transport the patient while finishing the treatment.
  - Restart patient on oxygen therapy at appropriate concentration.

- Reassess patient, especially lung sounds, vitals, and oxygen saturation after each treatment. If minimal relief is obtained, treatment may be repeated once.
- Document on the EMS patient care report the name of the medication, the time(s) of administration, the number of doses, and pulse rate before administration.
- Packaging and safe transport should not be delayed significantly by bronchodilator or nebulizer administration.
- A paramedic unit must assist with patient care unless the nearest appropriate hospital is closer than the paramedic unit.
- If a paramedic unit is not available, radio a report to the emergency department advising of ETA and patient status.
- Contact medical control with any questions or concerns. Document medical control physician number and any orders on the patient care report.

#### **RESPIRATORY FAILURE/ARREST:**

- Be vigilant in the assessment of the pediatric patient with a respiratory emergency.\*\*
- Open the airway using either the jaw thrust or head tilt/chin lift maneuver.
- Clear the airway via suction if needed.
- Place in the appropriate airway adjunct to assist in patency.
  - Nasal airways should not be placed in the infant or very small child. Assess the size of the nares and the proper length of the adjunct, as not to occlude the airway.
- Administer oxygen.
- Support ventilations with a size appropriate bag valve mask and age appropriate rate.
- Monitor cardiac status and be prepared to begin CPR.

\*Please refer to a current EMT textbook for a full review of acute respiratory distress/failure and administering the above mentioned medication treatments.

\*\*High-risk infants: an infant who is on an apnea monitor or who has been identified as having an "apparent life-threatening event" (ALTE). These infants include those who have experienced periods of apnea (cessation of breathing), or are at risk of prolonged apnea. When you arrive at the scene of an incident involving this type of baby, no matter how well the baby may look, transport to the ED is always advised.

## **NON-INVASIVE GAS MONITORING ~ PULSE OXIMETRY and CO-OXIMETRY**

**INDICATIONS:** Pulse oximetry and CO-oximetry is an adjunctive technique that can help to detect hypoxia and to assess the impact of oxygen therapy. The EMT assessment and treatment of the patient is much more important than the pulse oximeter or CO-oximeter reading. The pulse oximeter and CO-oximeter supplies one additional small piece of information.

“Room” Carbon monoxide monitoring: is an adjunctive technique that can help to detect the presents of carbon monoxide in the air that would pose a threat to the patient and EMS crews.

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- “Room” Carbon monoxide monitoring:\*
- If audible alert sounds suspect the presence of carbon monoxide.
- Consider scene safety and additional resources
- As soon as practical, remove patient to non-contaminated area
- Pulse oximetry and CO-oximetry:\*\*
  - Provide appropriate supplemental oxygen.
  - Obtain a pulse oximeter reading (SaO<sub>2</sub>). \*\*\*
    - The pulse oximeter reading can be assessed prior to giving oxygen if this does not significantly delay oxygen therapy. A reading taken after oxygen has been administered can be compared to the first reading for signs of improvement or deterioration of oxygenation.
    - Make sure the pulse ox reading correlates with the patient’s palpated pulse rate
  - Obtain CO-oximeter reading, if available \*\*\*\*
    - If carboxyhemoglobin is <5%, consider other possible causes of symptoms.
    - If carboxyhemoglobin is >5%, and patient has suffered a loss of consciousness or altered mental status, suspect CO poisoning
  - Continue appropriate oxygen therapy and transport
  - Always treat the patient, not the pulse oximeter or CO-oximeter reading. Do not let the pulse oximeter or CO-oximeter delay other assessment or treatment.

\*Delaware EMS Medical Directors recommend that all EMS crews carry “room” carbon monoxide detectors with an audible alert on their first- in bag for provider and patient protection.

\*\*Please refer to a current EMT textbook for a full review of pulse oximetry and oxygen therapy.

\*\*\*Certain medical conditions will give a falsely high pulse oximeter reading. The most common condition is carbon monoxide poisoning. Do not rely on a pulse oximeter reading if carbon monoxide toxicity is a consideration.

\*\*\*\*CO-oximetry may be performed as an option by agencies carrying CO monitoring equipment

## **CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)**

**Requires OEMS written approval prior to participation**

**INDICATIONS:** Respiratory distress or failure, due to cardiogenic pulmonary edema (CHF), asthma, chronic obstructive pulmonary disease (COPD), or emphysema in which the patient demonstrates spontaneous respirations and a patent, self-maintained airway.

**VITAL SIGNS AND ASSESSMENT CRITERIA:** (a majority of vital sign and assessment criteria should be present)

- Tachypnea = Respiratory Rate greater than or equal to 24 bpm
- Tachycardia = Heart Rate greater than or equal to 100 bpm
- Hypertension = Systolic Blood Pressure greater than or equal to 120mmHg
- Hypoxia = Pulse Oximetry reading less than or equal to 90%
- Labored breathing = That results in the patient being unable to complete a full sentence

### **CONTRAINDICATIONS:**

- Circumstances in which endotracheal intubation or a surgical airway is preferred or necessary to secure a patent airway
- Circumstances in which the patient does not improve or continues to deteriorate despite CPAP administration
- Patients with respiratory distress secondary to trauma

- 
- Assure a patent airway.
  - Administer 100% O<sub>2</sub> via appropriate delivery system.
  - Perform appropriate patient assessment including obtaining vital signs, pulse oximeter (SpO<sub>2</sub>) reading, and cardiac rhythm (*regular or irregular*).
  - Apply CPAP device per manufacturer's instructions.\*
  - Continuously reassess the patient.
  - Monitor continuous pulse oximetry.
  - Follow the appropriate set of standing orders for continued treatment.

- Contact the medical control as soon as possible to allow for prompt availability of hospital CPAP / BiPAP equipment and respiratory personnel.
- A patient care report **must** be completed and left with the patient's caregivers before leaving the medical facility.

\*For circumstances in which the patient does not improve or continues to deteriorate despite CPAP and/or medical therapy, terminate CPAP administration and perform BVM ventilation.

## **SEVERE ALLERGIC REACTION**

**INDICATIONS:** Generalized allergic manifestations such as urticaria or history of an allergic exposure with:

- Airway obstruction (partial or complete) OR
- Clinical evidence of shock including altered mental status, confusion, delayed capillary refill, and cool, clammy, or mottled skin.

Some patients with severe asthma may manifest their allergic reaction primarily as an asthma attack.

- 
- Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol).
  - Assess lung sounds during the physical examination.
  - If a patient has epinephrine via auto-injector (Epi-Pen®, Epi-Pen Jr.®, or Twinjet®) prescribed by their physician, assist the patient with their epinephrine auto-injector.\*
  - If the patient is 25 years or younger and the BLS agency is authorized by the State EMS Medical Director to carry epinephrine auto-injector(s) on the unit, administer one dose of epinephrine via auto-injector (Epi-Pen®, Epi-Pen Jr.®, or Twinjet®) as indicated (See epinephrine auto-injector policy).\*\*
  - EpiPen® Auto-injector (adult  $\geq$  30kg / 66lbs) delivers a single 0.3 mg epinephrine dose.
  - EpiPen Jr® Auto-injector (children 15-30kg / 33-66lbs) delivers a single 0.15 mg epinephrine dose.
  - TwinJet® Auto-injector (adult  $\geq$  30kg / 66lbs) can deliver up to two doses of epinephrine (0.3 mg and 0.15 mg).
  - Check the auto-injector to ensure the medication is not expired, has not become discolored, does not contain particulates, or sediments.
  - Prep skin site with alcohol (only if alcohol is available-not necessary).
  - Remove the safety cap from the auto-injector.
  - Place the tip of the auto-injector against the lateral aspect of the patient's thigh midway between the waist and knee.
  - Push the injector firmly against the thigh until the spring-loaded needle is deployed and the medication is injected (**AT LEAST 10 SECONDS**).

- Dispose of the auto-injector in a sharps container: **Be careful of the needle as it will now be protruding from the end of the injector.**
- Medical control should be contacted before an additional dose of epinephrine via auto-injector is administered if symptoms continue after 10 minutes.
- Medical control should be contacted before a pregnant patient receives or uses epinephrine due to the possible effect on the fetus.
- Medical control must be contacted before a patient >55 years old or a patient with known cardiac disease receives or uses epinephrine.
- Packaging and safe transport should not be delayed significantly by epinephrine administration.
- A paramedic unit must assist with patient care unless the nearest appropriate hospital is closer than the paramedic unit.
- If a paramedic unit is not available, radio a report to the emergency department advising of ETA and patient status.
- Contact the medical control with any questions or concerns regarding epinephrine therapy if needed. Document medical control physician number and any orders on the patient care report.
- Document on the EMS patient care report the name of the medication, the prescribing physician (if applicable), dose and the time of administration. A PCR **MUST** be submitted to the emergency department at time of patient arrival if epinephrine is administered.

\*Please refer to a current standard EMT textbook for a full review of allergic reactions and administering epinephrine auto-injectors.

\*\*It is optional for BLS agencies to carry epinephrine auto-injector(s) on BLS units that were not prescribed by the patient's physician. Agencies **must** follow the guidelines contained in the epinephrine auto-injector policy before placing auto-injector(s) on the unit.

## **ALTERED MENTAL STATUS**

**INDICATIONS:** Incomprehensible speech, inappropriate verbal responses, inability to follow verbal commands, decreased responsiveness, or unresponsiveness. If a patient is known to have Diabetes Mellitus and has altered mental status, the cause of the altered mental status may be low blood sugar.

- 
- Follow general patient care guidelines.
  - Determine the appropriate response of the patient based on the developmental expectations of each age group. Enlist the assistance of the parent/caregiver or family member to determine what is "normal" for this patient.\*
  - Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol).
  - Be alert to signs of trauma on physical exam. Patients with altered mental status due to trauma should not be given anything by mouth in case their condition worsens unexpectedly or the patient requires surgery.
  - Obtain a blood sugar level (see BLS glucose testing policy). If the blood sugar is less than 60mg/dl and the patient is alert and able to protect their airway, use oral glucose 24 grams. Make sure that the oral glucose has not expired.\*\*
  - If the patient is unresponsive or not alert enough to protect their own airway, paramedics or hospital personnel will need to administer intravenous glucose in order to avoid aspiration.
  - Monitor and record vital signs. If patient's blood pressure drops below 100 mmHg systolic, treat for shock.
  - If after 10 minutes the patient continues to be symptomatic, re-determine blood glucose level and administer a second dose of oral glucose 24 grams if glucose is still below 60mg/dl and patient is alert and able to protect their own airway.
  - Document on the EMS patient care report the time of administration of oral glucose and any change in the patient's condition.
  - Do not delay safe transport in order to obtain a blood glucose level.
  - A paramedic unit must assist with patient care unless the nearest appropriate hospital is closer than the paramedic unit.
  - If a paramedic unit is not available, initiate transportation to a CT capable, stroke certified\*\*\* medical facility and provide a radio report to the emergency department advising them of the ETA and patient's condition.
  - Contact medical control directly with any questions or concerns. Document the medical control number of the physician and any orders on the patient care report.

\*Special Considerations for causes of Altered Mental Status:

**A** - Alcohol and abuse  
**E** - Epilepsy, electrolytes, encephalopathy  
**I** - Insulin  
**O** - Opiates, overdose  
**U** - Uremia occupying lesions, SAH

**T** - Trauma, temperature  
**I** - Infection  
**P** - Poison, Psychogenic  
**S** - Shock, seizure, stroke, space

**\*\*Please refer to a current standard EMT textbook for a full review of altered mental status and administering oral glucose.**

**\*\*\*Stroke Certified by the State of Delaware or The Joint Commission (TJC), formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Refer to the county EMS Medical Director's current list of stroke certified medical facilities.**

## **SEPSIS ~ Adult**

**INDICATIONS:** Sepsis is the life threatening manifestation of severe infection

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- Follow general patient care guidelines.
- Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol).
- Monitor blood glucose level as appropriate (see BLS glucose testing policy).
- Consider sepsis in patients presenting with:
  - Suspicion of infection\*
  - 2 or more systemic inflammatory response syndrome (SIRS) criteria:
    - Temperature greater than 38 C or less than 36 C
    - Heart rate greater than 90
    - Respiratory rate greater than 20
    - Hypotension (Systolic BP less than 90)
- Consider requesting paramedics
- Contact medical control directly with any questions or concerns. Document the medical control number of the physician and any orders on the patient care report
- Notify receiving hospital upon arrival of potentially septic patient.

\*Risk factors for infection:

- Elderly patients with altered mental status from baseline
- Nursing home patients
- Chronic disease (e.g. diabetes, renal failure/dialysis)
- Immunosuppression (e.g. cancer with chemotherapy, HIV+, transplant)
- Indwelling catheters and central lines

## **SUSPECTED STROKE**

### **INDICATION:**

Patients may have the following clinical symptom(s);

- Altered level of consciousness
  - Impaired speech
  - Unilateral weakness / hemiparesis
  - Facial asymmetry / droop
  - Headache
  - Poor coordination or balance
  - Partial loss of peripheral vision
  - Vertigo
  - Consider hypoglycemia, trauma, and other etiologies of stroke symptoms, and follow applicable protocol if appropriate.
- 
- Follow general patient care guidelines.
  - Provide appropriate supplemental oxygen. Obtain a pulse oximeter reading (see pulse oximeter protocol).
  - Consider ALS.
  - Be alert to signs of trauma on physical exam.
  - Obtain a blood sugar level (see BLS glucose testing policy).
  - Note exact time of symptom onset\*.
  - Assess Cincinnati Stroke Scale (see appendix B).
  - Transport to the nearest appropriate CT-capable, Stroke Certified\*\* medical facility without delay
  - Transport in semi-Fowlers position.
  - Contact medical control directly with any questions or concerns. Document the medical control number of the physician and any orders on the patient care report.
    - Medical Control may divert patient to local hospital that is the most prepared to care for acute stroke patients.

\*Attempt to identify the precise time of the onset of the patient's first symptoms. The time of onset is extremely important information, and patient care may be different if

patient can be delivered to a receiving hospital capable of treating acute strokes within 4.5 hours from onset of symptoms. If the patient awoke with their symptoms, then the symptom onset is not considered to be <4.5 hours.

**\*\*Stroke Certified by the State of Delaware or The Joint Commission (TJC), formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Refer to the county EMS Medical Director's current list of stroke certified medical facilities.**

The Office of Emergency Medical Services (OEMS) will periodically compile and publish a list of approved receiving facilities based on the receiving facilities level of certification and available types of care. This list should be considered when determining the most appropriate destination for patients. The list is available on the OEMS web site at [www.dhss.delaware.gov/dhss/dph/ems/ems.html](http://www.dhss.delaware.gov/dhss/dph/ems/ems.html)

## **INITIATION OF RESUSCITATIVE EFFORTS**

**INDICATIONS:** For initiation of cardiopulmonary resuscitation for patients in cardiac arrest

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- Follow general patient care guidelines
- CPR (use of mechanical chest compression device is recommended) shall be initiated for all patients **unless** one or more of the following criteria apply:
  - Resuscitation would place the rescuer at significant risk of physical injury
  - Injuries which are obviously incompatible with life.\*
    - Decapitation
    - body fragmentation
    - severe crush injury to head (without vital signs)
    - severe crush injury to chest (without vital signs)
    - severe thermal burns (without vital signs)
    - gunshot wounds to the head with lateral entrance wound and an opposite side exit wound (without vital signs)
- Decomposition of the body.
  - Skeletalization
  - severe bloating (without vital signs)
  - skin slough (without vital signs)
- The rescuer is presented with a valid Pre-Hospital Advanced Care Directive (PACD). Presentation of any other advance directive type documents requires immediate contact with medical control.
- For patient's who do not meet the criteria for initiation of cardiopulmonary resuscitation, withhold resuscitation and have paramedics continue in at a reduced rate for a death pronouncement.

\*At no time should BLS cancel paramedics to make a pronouncement as BLS providers cannot make pronouncements in the field. **The only exception, to cancelling the paramedics, would be that if the patient met the criteria for the obvious death circumstances per Priority Medical Dispatch®**

## **ADULT CARDIOPULMONARY RESUSCITATION GUIDELINES**

Current AHA guidelines reflect the importance of compressions for survival from cardiac arrest. EMS practice must evolve to address this important change.

- Compressions should begin as soon as possible following EMS arrival.
  - Rapid movement to the patient by providers is critical
  - Treating the patient where they are found allows compressions to be started without delay. Only provider safety issues should prompt patient movement.
- Intubation can be delayed and BVM utilized for the first 6 minutes of CPR
- Compressions should be continuous.
  - No procedure (intubation, IV/IO start, etc) should slow or stop compressions
    - Interruption for defibrillation should be minimal and compressions should resume AS SOON AS shock delivery is complete.
    - Frequently switch providers performing chest compressions to maintain peak performance.
    - For patient care and provider safety, the EMS medical directors advocate the use of optional mechanical chest compression device.
- Compressions should be FAST, HARD, and DEEP at a rate of 100-120 compressions per minute and to a depth of at least 2 inches.
  - Faster or slower rates worsen patient outcome
  - Ensure complete recoil of the chest wall prior to the next compression
- Ventilations
  - Ventilate at 8-10 breaths per minute to decrease intrathoracic pressure
  - Patients should be bagged using a one-hand squeeze
- Complete a minimum of 6 minutes of compressions before moving patients off scene or initiating transport unless the use of a mechanical chest compression device has been established and is providing effective compressions.
  - Patient movement on stretchers prevents effective CPR
  - Effective CPR cannot be safely performed in a moving ambulance

- For patient care and provider safety, the EMS medical directors advocate the use of an optional mechanical chest compression device.

## **PEDIATRIC CARDIOPULMONARY RESUSCITATION GUIDELINES**

Current AHA guidelines reflect the importance of compressions for survival from cardiac arrest. EMS practice must evolve to address this important change.

- Compressions should begin as soon as possible following EMS arrival.
  - Rapid movement to the patient by providers is critical
  - Treating the patient where they are found allows compressions to be started without delay. Safety issues should prompt patient movement.
- Intubation can be delayed and BVM utilized for the first 6 minutes of CPR

### **High-quality CPR**

- Compressions should be continuous.
  - No procedure (intubation, IV/IO start, etc) should slow or stop compressions
  - Interruption for defibrillation should be minimal and compressions should resume AS SOON AS shock delivery is complete.
  - Frequently switch providers performing chest compressions to maintain peak performance
    - “Push fast”: push at a rate of at least **100 compressions per minute**.
    - “Push hard”: push with sufficient force to depress at least one third the anterior posterior (AP) diameter of the chest
    - 1 1/2 inches (4 cm) in infants
    - 2 inches (5 cm) in children.
  - Faster or slower rates worsen patient outcome
  - Ensure complete recoil of the chest wall prior to the next compression
- Ventilations
  - Ventilate at 8-10 breaths per minute to decrease intrathoracic pressure
  - Patients should be bagged using a one-hand squeeze
- Avoid excessive ventilation
- Complete a minimum of 6 minutes of compressions before moving patients off scene or initiating transport unless the use of a mechanical chest compression device has been established and is providing effective compressions
  - Patient movement on stretchers prevents effective CPR

- Effective CPR cannot be safely performed in a moving ambulance

## **GUIDELINES REGARDING DO NOT RESUSCITATE ORDERS**

### **Living Will:\***

- Living wills do not apply to out-of-hospital care.
- A living will has no impact on the decision of whether or not to initiate or continue resuscitative efforts or any other care.

### **Do Not Resuscitate Order (DNR):**

- Contact medical control immediately.

### **Prehospital Advance Care Directive (PACD):**

- A PACD is a Pre-Hospital Advanced Care Directive that allows terminally ill patients the right to elect to either receive full, limited, or no type of resuscitative efforts performed upon them by EMS field responders.
- In order for a PACD to be valid and for an EMS field responder to be legally able to adhere to its contents, the following must apply:
  - The patient must have an official PACD form, issued by the State of Delaware Division of Public Health.
  - The patient must have a terminal illness, and proof of this must be documented by the patient's primary care physician.
- The official PACD form must be signed by both the patient and the patient's primary care physician.
- The PACD must denote the type of care (Option A, B, or C) the patient has elected to have.
  - **Option A:** Advanced Life Support (Maximal Restorative Care Before Arrest), then Do Not Resuscitate.

Under this option, the patient shall receive the full scope of restorative interventions by the EMS field responder(s) permissible under the Delaware Statewide Advanced Life Support (ALS) treatment protocol prior to cardiac arrest.

- **Option B:** Basic Life Support (BLS-Limited Palliative Care Only Before Arrest), then Do Not Resuscitate.

Under this option, the patient shall receive comfort care for control of signs and symptoms only.

- **Option C:** Do Not Resuscitate-No Care Administered Of Any Kind.

With this option in place, no form of comfort care or life saving efforts of any kind will be administered by EMS personnel, unless the patient provides some form of communication such as verbally, eye blink, finger tap, or some other similar form of communication to indicate the desire to revoke the existing PACD order in place.

- The wallet identification card, a wrist bracelet, or any other form of PACD identification mechanism is only secondary and not valid for EMS field responder personnel to honor without the presence of the physician and patient/surrogate signed PACD form.
- The purpose of wallet cards, bracelets, or other similar identification mechanisms is to alert emergency field personnel to the fact that a signed PACD form exists, and every feasible effort should be made to locate the form in an expedient manner.
- Should the PACD form be located and presented to emergency field responder personnel once life saving efforts have commenced, emergency field responder personnel will alter their course of action immediately, in response to the patient option number appearing on the signed PACD form.
- EMS field response personnel, upon witnessing and verifying a signed PACD order, shall note said order in writing to ensure its inclusion in the patient's medical record. Said order shall also be noted and documented on the trip record sheet.
- EMS field response personnel, upon witnessing and verifying the revocation of the PACD order by the patient, shall note said revocation-and the method of communication used by the patient for said revocation-in writing to ensure its inclusion in the patient's medical record. Said order shall also be noted and documented on the PCR.
- In any situation where EMS field responders have a good faith basis to doubt the validity of a signed PACD form, the responder should resuscitate.

#### **Medical Orders for Life-Sustaining Treatment (MOLST):**

- A MOLST form is a medical order sheet based on the person's current medical condition and wishes.
- Any section not complete implies full treatment for that section.
- MOLST is generally for patients with serious health conditions who:
  - Wants to avoid or receive any or all life-sustaining treatment.
  - Resides in a long-term care facility or requires long-term care services.
  - Might die within the next year.

- Life-sustaining treatment may be ordered for a trial period to determine if there is benefit to the patient.
- **Treatment Guidelines:** No matter what is chosen, the patient will be treated with dignity and respect, and health care providers will offer comfort measures.
- The MOLST must denote the type of care (Sections A, B, C or D) the patient has elected to have.
  - **Section A:** Cardiopulmonary Resuscitation (CPR): Person has no pulse and is not breathing.\*
    - CPR Order: Attempt Cardio-Pulmonary Resuscitation
    - DNR Order: Do Not Attempt Resuscitation (Allow Natural Death)
    - \*When person is not in cardiopulmonary arrest, follow orders in B, C, and D. (as appropriate)
  - **Section B:** Medical Interventions: Person has a pulse and/or is breathing.
    - Comfort Measures Only.
      - ◆ Includes care described above.
      - ◆ Use medical treatment, IV fluids, and cardiac monitor as indicated.
      - ◆ Do not use intubation or mechanical ventilation.
      - ◆ May use less invasive airway support (e.g. CPAP, BiPAP).
    - Full Treatment.
      - ◆ Includes care described above.
      - ◆ Use intubation, advanced airway interventions, mechanical ventilation, and cardioversion as indicated.
      - ◆ Additional Orders: (e.g. dialysis, etc.)
      - ◆ Area for physician to write additional orders.

- **Section C:** Antibiotics
- **Section D:** Artificially Administered Nutrition
- **Section E:** Summary of Medical Condition/Goals
- **Section F:** Signatures

\*If a question should arise regarding DNR's, PACDs, MOLST or living wills at any time during treatment, medical control should be contacted

## **PEDIATRIC AND ADULT TRAUMA**

**INDICATIONS:** This Trauma Protocol applies to patients with any of the following field triage criteria:

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If any of the conditions in mechanism, vital signs or obvious injury are present, transport to a Trauma Center. Consider air medical transport.

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**Mechanism:** Patient ejection (partial or complete) from vehicle  
Motorcycle crash > 20 mph or rider thrown.  
Death of passenger in same vehicle compartment.  
Falls > 20 feet (adult)  
Falls > 10 feet (child) or 2-3 times the height of the child  
Auto-pedestrian/ auto-bicycle injury-thrown, run over or with significant (>20 mph) impact  
Vehicle telemetry consistent with high risk injury  
High risk auto crash: inner intrusion > 12" occupant/>18" anywhere

After evaluation of Mechanism and appropriate resources requested, proceed to Vital Signs.

---

**Vital Signs:**

Adults: Glasgow Coma Scale < 14.  
Systolic BP < 90 mmHg.  
Respiratory rate < 10 or >29.  
Heart rate < 50 or > 120 bpm.

Pediatrics: Pediatric Glasgow Coma Scale < 14.  
Refer to the **Abnormal Vital Signs** section of the Broselow<sup>tm</sup> tape.

Patients with abnormal vital signs should be transported to highest level trauma center practical.

Patients with GCS ≤ 14 or exhibiting new onset paralysis or paresis: consider direct transport to a Trauma Center with neurosurgical capabilities.

If **NO** for all elements in Vital Signs, proceed to Obvious Injury.

---

**Obvious injury:**

Penetrating injury to the torso, axilla, abdomen, head, neck, proximal extremities or groin.  
Major burns, inhalation injury, or trauma with burns.  
More than one proximal long bone fracture.  
Pelvic fracture (suspected on clinical grounds).

Flail chest or other major chest injury  
Limb paralysis  
Major external hemorrhage.  
Amputation above wrist or ankle  
Crushed, degloved or mangled extremity  
Open or depressed skull fracture  
AVPU scale: does not respond to voice

Patients with obvious injury should be transported to highest level trauma center practical.

If **NO** for all elements in Obvious Injury, proceed to Extenuating Circumstances.

---

**Extenuating Circumstances:** (Not stand alone criteria for the initiation of trauma protocol or helicopter transport.)

Pregnancy > 20 weeks  
Renal dialysis  
Age < 12 or > 55 years  
Other significant medical conditions- discuss with medical control  
Time Sensitive extremity injuries  
Required by patient condition in the judgment of the prehospital provider  
Anticoagulation (Coumadin, Lovenox, heparin, Plavix) and bleeding disorders (Factor deficiencies, ITP)

If **YES** to extenuating circumstances, contact medical control and consider transport to a specific trauma system hospital with necessary resources.

---

If **NO** to all above, routine transport.

---

When in doubt, transport to a trauma center.

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- Assure scene safety and a safe rescue environment.
- Establish manual cervical spine control- consider entry into selective spinal immobilization algorithm.
- Perform a rapid trauma assessment.
- Establish and maintain a patent airway.
  - Manual maneuvers while protecting the C-spine
  - Suction
  - Oropharyngeal or nasopharyngeal airway
- Evaluate presence and quality of breathing.
  - Rate

- Tidal volume
- Tracheal deviation
- If the airway is patent and breathing is adequate, obtain a pulse oximeter reading and place the patient on the proper oxygen breathing device.
- If breathing is inadequate, assist ventilation using bag-valve-mask with 100% oxygen.
- Determine presence of frank hemorrhage and assess cardiac output
  - Skin color and temperature
  - Capillary refill
  - Presence of peripheral pulses

**External Bleeding Protocol:**

- Apply direct pressure to the hemorrhaging wound
- If direct pressure is not adequate to control hemorrhage, a provider may use a tourniquet for hemorrhage that is anatomically amenable to tourniquet application and note time of application.
- For hemorrhage that cannot be controlled with above, apply approved hemostatic agent with direct pressure.
- When bleeding controlled, may substitute an adequate pressure dressing for direct pressure.
- Contact medical control and provide pertinent information including information on hemostatic agent and tourniquet as appropriate.
- On arrival to health care facility, a report to the medical staff must include the type of bleeding, the methods used to control the bleeding, the name of the hemostatic agent used to control the bleeding, the number of hemostatic agent dressings used, whether any dressings were lost en route. If a tourniquet was applied to control hemorrhage, when it was applied and if medical control requested an attempt to release the tourniquet, what occurred at the bleeding site.
- A patient care report must be completed at the receiving facility and left at the patient's bedside before the EMS crew returns to service.

**Burn Protocol:**

- Airway and oxygen therapy, as needed
- Stop the burning process

- Bandage burned areas using clean, dry sheets.
- Cover the patient and provide for an appropriate warm environment to prevent heat loss.
- Remove jewelry and clothing
- Assess burn percentage using the "Rule of Nines" (see appendix B)
- Splint obvious long bone fractures and provide full spinal immobilization according to selective spinal immobilization algorithm.
- Initiate transport to an appropriate trauma facility. Scene time should be kept under ten (10) minutes unless extenuating circumstances exist.\*
- Complete the detailed trauma assessment and expose (as appropriate) while en route.
- Reassess patient every five minutes unless otherwise indicated by patient's condition.
- Transport to the nearest appropriate medical facility without delay. If history, rapid, and detailed trauma assessment are consistent with an isolated head or spinal column injury, consider rapid direct transportation to a medical facility with immediate neurosurgical capabilities. Physical presentation consistent with significant head/spinal trauma are:
  - New onset paralysis or paresis.
  - Isolated head trauma with altered mental status.
  - Projectile vomiting.
  - Blood/cerebral spinal fluid draining from ears, eyes, nasal/oral airway
  - Abnormal pupillary function.
  - Obvious signs of a skull fracture, battle signs, raccoon eyes.
  - Priapism.
- Patients less than the age of 12; should be transported to a pediatric trauma center when patient condition, time and transport method allow.
  - duPont Hospital for Children will take patients up to and including 17 years of age.
- Burn patients should be evaluated at the nearest appropriate trauma center
- Consider helicopter transport if ground transport to the appropriate hospital is expected to exceed 10 minutes.
- Unstable penetrating trauma patients should go directly to the closest trauma center.

- Patients in shock with deteriorating vital signs or ongoing airway compromise should be transported to the closest trauma center.

\*Trauma scene times should be less than 10 minutes unless there are extenuating circumstances. Reasons for scene times over ten minutes should be documented on the chart. Appropriate reasons for prolonged trauma scene times include extrication, securing scene safety, presence of multiple victims, awaiting helicopter touch down for transport to a higher level trauma center, etc.

## **SPINAL IMMOBILIZATION GUIDELINE**

**INDICATIONS:** Apply this guideline to all patients involved in known or suspected blunt trauma.

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**Implement spinal immobilization in the following circumstances:**

- Significant multiple system trauma.
- Severe head or face trauma.
- If altered mental status (including drugs, alcohol and trauma) and:
  - No history available
  - Found in setting of possible trauma (e.g., lying at the bottom of stairs or in street); or
  - Near drowning with a history or probability of diving.
- Loss of consciousness after trauma.
- Spinal pain or tenderness, including any neck pain with a history of trauma.
- Numbness or weakness in any extremity after trauma
- Patient with significantly painful distracting injury.

**Modifiers:**

**High risk:**

- Age > 64 years
- Dangerous mechanism (fall > 5 stairs, axial load, high speed MVC with ejection and/or rollover)
- motorized recreation vehicles
- bicycle collision

**Low Risk:**

- Simple low speed rear-end MVC without being pushed into oncoming traffic, without rollover, without being struck by a large vehicle or high speed vehicle
- Ambulatory at any time
- Penetrating trauma to the extremities or core (below the clavicles) without neurologic deficit

## **PATIENT RESTRAINT GUIDELINES**

- Patient care remains the primary responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.\*
- Soft restraints are to be used only when necessary in situations where the patient is potentially violent and may be of danger to themselves or others. Patients who are clinically competent retain a right to refuse transport. EMS providers must remember that aggressive violent behavior may be a symptom of medical conditions such as but not limited to:
  - Head trauma
  - Alcohol/drug related problems
  - Metabolic disorders (i.e., hypoglycemia, hypoxia, etc.)
  - Psychiatric/stress related disorders
- All restraints should have the ability to be quickly released, if necessary in an emergency.
- It is medically acceptable to have a police officer follow a restrained patient's ambulance to the hospital in their police vehicle, as long as they maintain a position and contact with the transporting ambulance that will allow the officer to quickly release any restraining device that requires a key or special releasing device that they have applied in the event of a sudden deterioration in a restrained patient's condition.
- Patients should be transported in the supine position to ensure adequate respiratory and circulatory monitoring and management.
- The prone position should be a position of last resort and rarely used. This position carries a higher risk of patient injury or death.
- All restrained patients should be placed on a stretcher with adequate foam padding particularly underneath the head. Extremity restraints should be secured to the stationary portion of the stretcher frame.
- Stretcher straps should still be placed on all patients as these are similar to seatbelts during transport.
- Restraints that use multiple knots or that may restrict chest wall motion are unacceptable.

- Restrained extremities should be monitored for color, sensory and motor function, pulse quality, and capillary refill at the time of application and at least every 15 minutes thereafter. The patient's respiratory status and pulse oximetry should be monitored during transport.
- Consider requesting paramedics for the administration of sedation.
- Restraint documentation on the EMS PCR shall include:
  - Reason for restraint
  - Agency responsible for restraint application (i.e., EMS, Police)
  - Documentation of vital signs, pulse ox, capillary refill and peripheral neurovascular status (motor/sensory).
- Medical control must be contacted if a patient is deemed too violent or uncooperative to be safely transported using the restraint methods and devices permitted by their prehospital protocols.

\*This policy is not intended for the interfacility transport of medically cleared involuntarily committed psychiatric patients.

## **NON-EMERGENCY / INTERFACILITY TRANSPORT PROTOCOL**

### **INDICATIONS:**

To provide emergency medical services safely and without delay to the patients requiring transfer from one medical facility to another medical facility, for patients being discharged from a medical facility to a home residence, patients that are direct admissions to the hospital that bypass the Emergency Department, or for patients being transported to and from a routine medical appointment.

These protocols are not intended to indemnify the medical sender or receiving facilities from their obligations under the EMTALA statutes.

This protocol is only intended for use for patients that otherwise meet basic life support transport criteria. Transport personnel are not authorized and **will not** provide services beyond their scope of care. Should services beyond scope be required, a person qualified in its performance shall accompany the patient during transport.

Providers dispatched for a non-emergency transport that encounter a patient experiencing an acute emergency are responsible for providing initial patient care and transferring the patient to an equivalent or higher level provider or transporting the patient to an emergency department.

Temporary intravenous medications like antibiotics, intravenous drip medication that require frequent monitoring and maintenance, or intravenous pumps that are not part of the patient's long-term care plan are **excluded** from this protocol. **These excluded medications require advanced personnel for transport.**

- 
- BLS personnel may transport patients who meet the criteria of this protocol.
  - Interfacility transports shall not compromise the local 911/EMS resources of the community. It is the responsibility of the ambulance service to determine whether adequate resources are available to maintain appropriate EMS coverage to their community before committing to an interfacility transport.
    - Exception to this would be a 911 emergency call originating from a medical facility through a 911 dispatch center.
  - All Interfacility transports will be documented using the approved prehospital EMS PCR.

### **Intravenous Fluid Transport:**

- All patients with an established intravenous (IV) access.
- The destination facility shall be an inpatient facility no more than 60 minutes from the facility of origin if IV fluids are hanging. If a saline/heplock is in place, time constraints do not apply \*
- Patients with IV fluids shall have only standard IV fluids (normal saline, ½ normal saline, ringers lactate, or dextrose 5% and water) hanging at the time of transport. The fluids

will be set at a Keep Vein Open (KVO) rate by the sending facility and will not have medications or supplements added to the fluid.

- All fluids shall have at least 500 cc remaining in the bag at the onset of transport.\*
- The EMT shall not alter the flow rate of the IV fluids unless it is to shut them off in the event of an emergency. IV fluids need to be shut down for the following reasons:
  - Swelling, redness, or increased pain at the site of the IV insertion.
  - Fluids in the bag have emptied.
  - The IV catheter is inadvertently dislodged from the site.
- Medical control shall be contacted and paramedic intervention considered if the patient's condition deteriorates en route as evidenced by unstable vital signs, change in mental status or onset respiratory distress, chest pain, or neurological changes. The EMT is encouraged to contact medical control any time questions or concerns arise.

**Definitions:**

- Unstable vital signs: Heart rate  $\leq 60$  BPM or  $\geq 120$  BPM; respiratory rate  $\leq 10$  BPM or  $\geq 20$  BPM; systolic blood pressure  $\leq 90$  mmHg; Glasgow Coma Scale (GCS)  $\leq 14$ .
- KVO rate: 1 drop per minute.

\*The goal is to not have the bag of IV fluids empty prior to arrival at the destination facility. In the event this happens, the IV will be shut off for the remainder of the transport

**Indwelling Intravenous Catheters or Specialized Medical Devices:**

- Patients that have an "indwelling intravenous catheter without medication running". Includes any capped catheter that is inserted into a patient's vein or artery including, but not limited to, saline/heparin locks, Broviac catheters, Hickman catheters, PICC lines, Mediports and arterio-venous dialysis catheters.
- Patients that have a "Medication running that is part of the patient's normal treatment plan." This includes medications and devices that the patient or his or her family has been taught to use and either have been managing by themselves or will manage by themselves at the transport destination. These devices or medication may require infrequent maintenance, but **do not** require regular nursing assessment or patient monitoring related to the medication that is being administered. Examples include, but are not limited to, transportation of a patient with an analgesic pump to home, rehabilitation, or nursing home.
- Patients that have a medical device as part of their ongoing treatment. This device **will not** require any monitoring or care by EMS personnel during the transport
  - Wound Vacuum Drains: a special foam dressing with an attached evacuation tube is inserted into the wound and covered with an adhesive drape in order to create an

airtight seal. Negative pressure is applied and the wound effluent is collected in a canister.

- Nephrostomy Tubes; A percutaneous nephrostomy catheter is a small flexible, rubber tube that is placed through the skin into the kidney to drain urine
- Foley Catheters: flexible tubes that are passed through the urethra during urinary catheterization and into the bladder to drain urine.
- Gastric Devices
  - Feeding tubes: A feeding tube is a device which transports liquid nutrition to the stomach. A feeding tube can be inserted into the stomach (G-tubes), through the nose and into the stomach (NG-tubes), or through the nose and into the small intestine (NJ tubes).
  - Ostomy equipment: designed for those who have had a stoma created in their abdomen for excretion of bodily waste. Procedures, such as colostomies, urostomies, and ileostomies, all require an external bag to collect waste that is passed through the stoma.
- Other devices, not specified above, that will either be managed by the patient, patient's family or by medical personnel who **only intermittently monitor** the device
- Medical control shall be contacted and paramedic intervention considered if the patients condition deteriorates en route as evidenced by unstable vital signs, change in mental status or onset respiratory distress, chest pain, or neurological changes. The EMT is encouraged to contact medical control any time questions or concerns arise.

### **Ventilator Dependent Patients:**

**Mechanical ventilation** is a method to mechanically assist or replace spontaneous breathing. **A mechanically ventilated patient** is any patient that is dependant on a ventilator device to sustain the life of that patient.

- A ventilator dependent patient **must have** someone trained in the operation of the particular ventilator in use, who is also familiar with the monitoring and management of a patient with a ventilator failure. This person may be a respiratory therapist, registered nurse, paramedic or physician. Ideally, the person managing the ventilator will be familiar with providing care in the ambulance environment. A family member trained in the recognition of ventilator problems and management of respiratory distress might be considered as an appropriate provider, but it is recommend that the transporting BLS company, check with their insurance agent before providing a transport service with family in attendance.
- Medical control shall be contacted and paramedic intervention considered if the patients condition deteriorates en route as evidenced by unstable vital signs, change in mental status or onset respiratory distress, chest pain, or neurological changes. The EMT is encouraged to contact medical control any time questions or concerns arise. Paramedics called to an unanticipated interfacility ventilator patient transport problem,

will be expected to manage the patient's airway and breathing and transport the patient to the nearest appropriate emergency department.

# **APPENDIX A**

## **EMT PHARMACOLOGY INFORMATION**

### **ANAPHYLACTIC PRECAUTIONS**

- **Anaphylaxis:**

A generalized reaction occurring with dramatic suddenness (usually within a few minutes) after a patient has been exposed to some foreign material.

- **Cause:**

Any drug has the potential to precipitate anaphylaxis. Generally those administered intravenously or parenterally are more likely to result in life-threatening or fatal anaphylaxis than those ingested or applied to the skin or mucous membranes.

- **Clinical features:**

The patient with anaphylaxis may develop laryngeal edema and bronchospasm which cause respiratory distress and anoxia. The sooner the symptoms develop after the initiating stimulus the more intense the reaction. The symptoms include the following: generalized flush, urticaria, pruritus, anxiety, dyspnea, wheezing, choking, orthopnea, vomiting, cyanosis, paresthesias, shock, and loss of consciousness. Anoxia, shock, and death may occur within 5-10 minutes.

- **Prevention:**

- Know the patient's allergy history by asking the patient or family before giving a new medication.
- Know the precautions listed for each drug.

- **Treatment:**

- See Allergic Reaction protocol

### **INTRAVENOUS INFILTRATION PRECAUTIONS**

- Before transporting any patient with an intravenous (IV) access catheter with a solution running, the EMT must check the IV site for patency and signs of infiltration and/or phlebitis. If infiltration occurs, stop the IV fluid do not remove the IV device. Contact the medical control physician immediately for orders.
- **Factors that increase the risk of infiltration:**
  - Sclerotic vascular disease
  - Venous obstruction in the arm (check for edema)
  - Radiation treatment near the site of injection
  - High drug concentration
  - Limited choice for vein selection
  - Multiple venipunctures
  - Elderly or debilitated
  - Superior vena cava syndrome
  - Specific characteristics of the drug
  - Uncooperative/irrational individual
- **Symptoms of an infiltration:**
  - If pain, burning or stinging occurs at the injection site, evaluate the site for swelling, redness, and inflammation. The presence of a blood return or absence of edema does not negate the possibility of the infusate being spread outside the vein to surrounding tissue. Drug leakage may occur at the site of a previous vessel injury while the needle/catheter is still in the vein.

**ALBUTEROL SULFATE (PROVENTIL, VENTOLIN, AEROLIN, VENTORLIN,  
ASTHALIN, ProAIR)**

- **Pharmacology:**
  - Synthetic sympathomimetic amine (a type of stimulant)
  - Stimulates beta-2 adrenergic receptors of the bronchioles
  - Little effect on blood pressure
  - Little cardiac effects
  - Main effect is bronchodilation
  - It may cause some vasodilation as evidenced by headache or flushing
- **Pharmacokinetics:**
  - Bronchodilation begins within 5 to 15 minutes after inhalation
  - Peak effect occurs in 30 minutes to 2 hours
  - Duration of action is usually 3-4 hours
- **Indications:**
  - To reverse bronchospasm (wheezing)
- **Adverse Effects:**
  - Tachycardia, palpitations, peripheral vasodilation, cough, headache, dizziness, tremor, and nervousness may be seen infrequently
- **Precautions:**
  - Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
  - If respirations worsen, discontinue use
  - Should be used with caution in patients with hyperthyroidism or coronary artery disease
- **Contraindications:**
  - Known hypersensitivity
- **Dosage:**
  - **Adults:** 2.5 - 5.0 mg by nebulized aerosol or 2 puffs by metered dose inhaler

- **Children:** Age 8 or older - 2.5 - 5.0 mg by nebulized aerosol or 2 puffs by metered dose inhaler. Ages 2 to 8 - 2.5 mg by nebulized aerosol or 2 puffs by metered dose inhaler

### **LEVALBUTEROL (XOPENEX, LEVOLIN)**

- **Pharmacology:**
  - Beta adrenergic receptor agonist
  - Stimulates beta-2 adrenergic receptors of the bronchioles
- **Pharmacokinetics:**
  - Bronchodilation begins within 5 to 15 minutes after inhalation
  - Peak effect occurs in 30 minutes to 2 hours
  - Duration of action is usually 3-5 hours
- **Indications:**
  - To reverse bronchospasm (wheezing)
- **Adverse Effects:**
  - Tachycardia, palpitations, peripheral vasodilation, tremor, headache, dizziness, and nervousness may be seen infrequently
- **Precautions:**
  - Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
  - If respirations worsen, discontinue use
- **Contraindications:**
  - Known hypersensitivity
- **Dosage**
  - **Adults:** 0.63 = 1.25 mg by nebulized aerosol
  - **Children:** Age 6 – 11 years - 0.31 mg by nebulized aerosol

## **OXYGEN**

- **Pharmacology:**
  - Elevates oxygen tension in the blood
  - Increases oxygen content of the blood
  - Improves tissue oxygenation
- **Pharmacokinetics:**
  - Changing the percentage of inspired oxygen will result in blood and tissue equilibration within 5 to 20 minutes.
- **Indications:**
  - Acute chest pain
  - Suspected hypoxemia of any etiology
  - Cardiopulmonary arrest
  - Trauma
- **Precautions:**
  - The main precaution is not administering enough oxygen to patients who need it. Never withhold oxygen from those in obvious need.
  - Oxygen should be given with caution to patients with emphysema

### **ALBUTEROL SULFATE / IPRATROPIUM BROMIDE (COMBIVENT)**

- **Pharmacology:**

- Combination of Ipratropium (an anticholinergic bronchodilator) and Albuterol (a beta-2 adrenergic bronchodilator)
- Ipratropium antagonizes the actions of the neurotransmitter acetylcholine, especially at the muscarinic receptor sites in bronchial smooth muscle
- Albuterol stimulates beta-2 adrenergic receptors of the bronchioles

- **Pharmacokinetics:**

- Bronchodilation
- Onset of action approximately 15 minutes
- Peak effect attained within 1 hour
- Duration of action 4- 5 hours

- **Indications:**

- To reverse bronchospasm (wheezing)

- **Adverse Effects:**

- Tachycardia, palpitations, peripheral vasodilation, tremor, headache and nervousness may be seen infrequently

- **Precautions:**

- Paradoxical bronchospasm often with firsts use of new canister
- Use with caution in patients with cardiovascular disease

- **Contraindications:**

- Known hypersensitivity

- **Dosage:**

- **Adults:** 2 puffs by metered dose inhaler

### **GLUCOSE, ORAL (Insta-Glucose, Glutose)**

- **Pharmacology:**
  - Carbohydrate gel
- **Pharmacokinetics Atropine:**
  - Provides source of carbohydrate for cellular metabolism
- **Indications:**
  - Altered mental status with a history of medication controlled diabetes
  - Hypoglycemia
- **Adverse Effects:**
  - Transient increase in blood glucose level
- **Precautions:**
  - Patient must be able to maintain the patency of their own airway and effectively swallow the medication
- **Contraindications:**
  - Unresponsive patient
  - Inability to swallow
- **Dosage:**
  - 1 tube = 24 grams of glucose
- **How supplied:**
  - Carbohydrate gel
  - Tube contains 24 grams of glucose (note; check tube labeling for exact amount, may vary slightly between manufacturers)

## **EPINEPHRINE**

- **Pharmacology:**

- The administration of epinephrine causes increases in
  - Systemic vascular resistance
  - Systemic arterial pressure
  - Heart rate
  - Contractile state
  - Myocardial oxygen requirement
  - Cardiac automaticity

- **Pharmacokinetics:**

- Intravenously administered epinephrine has an extremely rapid onset of action
- Is rapidly inactivated by the liver.
- Subcutaneous administration of epinephrine results in slower absorption due to local vasoconstriction.
- Local massage will hasten absorption

- **Indications:**

- Epinephrine selectively improves regional blood flow to the heart and brain
- The primary drug for the treatment of cardiac arrest
- Intravenous epinephrine may also be given to patients suffering true anaphylactic shock with impending cardiac arrest
- Patients suffering from severe allergic reactions may be given subcutaneous epinephrine
- Intravenous epinephrine may be an extremely dangerous drug when given intravenously to a person with normal circulatory status
- Its use should be reserved for cardiac arrest or for impending cardiac arrest due to anaphylactic shock

- **Precautions:**

- Do not mix with sodium bicarbonate as this inactivates epinephrine
- Epinephrine causes a dramatic increase in myocardial oxygen consumption

- Its use in the setting of an acute MI should be restricted to cardiac arrest
- **Side Effects:**
  - The individual may complain of increased heart rate, pale skin (pallor), dizziness, chest pain, headache, nausea, vomiting, excitability and anxiousness after administration of epinephrine
- **Dosage:**
  - **Anaphylactic shock:**
    - **Adults**-0.5 mg(0.5 ml of 1:1000 solution) subcutaneously (EpiPen)
    - **Children**-0.01 mg/kg(maximum 0.3 mg) subcutaneously (EpiPen jr)

## **ASPIRIN**

- **Pharmacology:**

- Inhibits platelet aggregation and prostaglandin synthesis

- **Pharmacokinetics:**

- Inhibits platelet aggregation by irreversibly inhibiting prostaglandin cyclo-oxygenase for the life of the platelet
- This prevents the formation of the platelet aggregating factor thromboxane A2.
- Onset of action is 1-2 hours
- Duration of action is 6 hours

- **Indications:**

- Acute coronary syndrome – acute myocardial infarction, angina pectoris

- **Adverse Effects:**

- Adverse reactions may include anaphylaxis, bronchospasm, dysrhythmias, hypotension, tachycardia, agitation, cerebral edema, intracranial hemorrhage, dehydration, hyperkalemia and renal failure.

- **Precautions:**

- By inhibiting platelet function, aspirin may lead to an increase in bleeding for patients with bleeding disorders

- **Contraindications:**

- Known allergy to aspirin or non-steroidal, anti-inflammatory drugs (NSAIDS) (i.e. Motrin, Alleve, Ibuprofen, etc.)
- Active GI ulcerations or bleeding, hemophilia or other bleeding disorders
- Pregnancy
- Children under 2 years of age

- **Dosage:**

- Up to 325 mg PO even if the patient is pain-free

- **How supplied:**

- Aspirin – chewable, 82 mg / tablet or Aspirin-325 mg / tablet

### **HEMOSTATIC AGENT**

- **Indications:** An agent used to reduce bleeding from minute vessels by hastening the clotting of blood or by the formation of an artificial clot.
- **Usage:** Life-threatening bleeding may need to apply tourniquets and pressure points to slow such bleeding enough to apply the agent. Once you slow the high-pressure blood loss, you must still get the agent into contact or close proximity to the source of the bleeding. Some hemostatic agents, such as bandages and sponges, may prove difficult to insert deeply enough to contact the affected artery or organ. Once applied, most hemostatic agents require you to maintain direct pressure on the wound for 2–5 minutes, giving the agent the opportunity to work.
- **How supplied:** For use in Delaware, the hemostatic agent must include the composition of X-ray detectable, granular beads of clotting agent contained in a porous mesh netting resembling a sponge/bandage.
- **Adverse Effects:**
  - CELOX: Individuals allergic to shellfish might risk an allergic reaction to chitosan-based ChitoGauze.
  - QuikClot: If incorrectly applied, the zeolite can quickly reach an extremely high temperature, causing burns and tissue damage.

## **DUODOTE**

- **Pharmacology:**

- DuoDote is an autoinjector that provides a single intramuscular dose of atropine and pralidoxime chloride. It is used as a self-administered therapy for symptomatic exposure to anticholinergic nerve agents and organophosphate pesticides.

- **Pharmacokinetics Atropine:**

- Competitively blocks the effects of acetylcholine at muscarinic receptors on smooth muscle, cardiac muscle and secretory gland cells

- **Pharmacokinetics Pralidoxime:**

- Reactivates acetylcholinesterase which has been inactivated by phosphorylation due to some organophosphorous nerve agents or pesticides.
- Does not reactivate phosphorylated acetylcholinesterase that has undergone the aging process

- **Indications:**

- Poisoning by organophosphorous nerve agents and pesticides

- **Adverse Effects:**

- Temporary headache caused by pralidoxime

- **Precautions:**

- Pralidoxime is excreted in the urine – impaired renal function may result in higher blood levels

- **Contraindications:**

- None in the presence of life-threatening organophosphorous poisoning

- **Dosage:**

- Moderate symptoms: Administer 1 DuoDote IM
- Severe symptoms: Administer 3 DuoDotes IM

- **How supplied:**

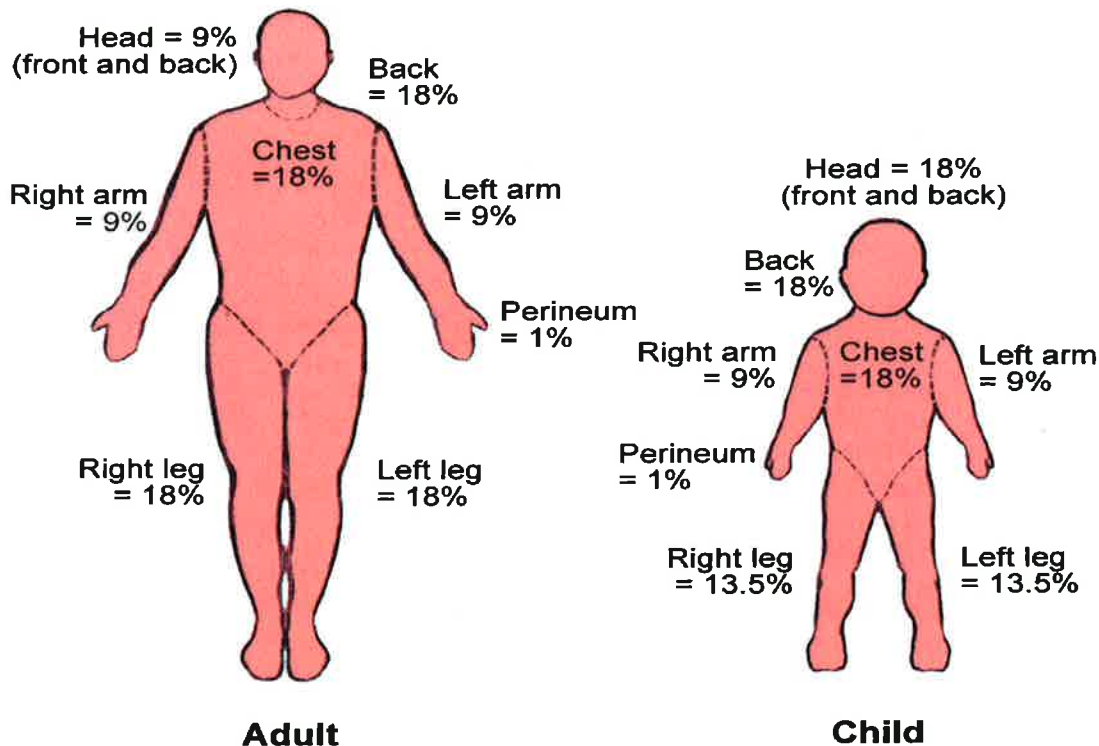
- Auto-injector containing 2.1 mg. of Atropine Sulfate and 600 mg. of Pralidoxime Chloride

## **NITROGLYCERINE**

- **Pharmacology:**
  - Vasodilator-effect on veins more than arteries
- **Pharmacokinetics Nitropaste:**
  - Absorbed through the skin
  - For antianginal effects the onset is 30 minutes, while duration is 3 hours
  - For vasodilation the onset is within 1 hour and duration is 3 to 6 hours.
  - Half-life is 1-4 minutes.
- **Pharmacokinetics Nitrotabs and Nitro Spray:**
  - Absorbed through oral mucosa
  - Antianginal and vasodilation effects within minutes
  - Duration of action is less than 5 minutes
- **Indications:**
  - For treatment of angina
  - Congestive heart failure
  - Not to be used for asymptomatic hypertension
- **Adverse Effects:**
  - Dose-related
  - Headache, hypotension, and dizziness
- **Precautions:**
  - May cause hypotension
- **Contraindications:**
  - Known hypersensitivity
- **Dosage:**
  - One-half to one inch every 6-8 hours
  - 0.4 mg sublingual every 5 minutes

- DO NOT USE IN CHILDREN
- **How supplied:**
  - Nitrol ointment 2%
  - Tablets 0.4 mg

| Vital signs                       | Neonate | 2 years | 4 years | 6 years | 8 years | 10 years | 12 years | 14 years | 16 years |
|-----------------------------------|---------|---------|---------|---------|---------|----------|----------|----------|----------|
| Respiratory rate (breaths/minute) |         |         |         |         |         |          |          |          |          |
| Girls                             | 28      | 26      | 25      | 24      | 24      | 22       | 20       | 18       | 16       |
| Boys                              | 30      | 28      | 25      | 24      | 22      | 23       | 20       | 16       | 16       |
| Blood pressure (mm Hg)            |         |         |         |         |         |          |          |          |          |
| Girls                             | —       | 98/60   | 98/60   | 98/64   | 104/68  | 110/72   | 114/74   | 118/76   | 120/78   |
| Boys                              | —       | 96/60   | 98/60   | 98/62   | 102/68  | 110/72   | 112/74   | 120/76   | 124/78   |
| Pulse rate (beats/minute)         |         |         |         |         |         |          |          |          |          |
| Girls                             | 130     | 110     | 100     | 100     | 90      | 90       | 90       | 85       | 80       |
| Boys                              | 130     | 110     | 100     | 100     | 90      | 90       | 85       | 80       | 75       |



## **CINCINNATI PREHOSPITAL STROKE SCALE**

### **Facial Droop (Patient smiles or shows teeth)**

Normal: Both sides of face move equally  
Abnormal: One side of face does not move at all

### **Arm Drift (Patient holds arms straight out in front of him/her and closes eyes)**

Normal: Both arms move equally or not at all  
Abnormal: One arm drifts compared to the other

### **Speech (Patient attempts to say "The sky is blue in Delaware")**

Normal: Patient uses correct words with no slurring  
Abnormal: Slurred or inappropriate words or mute

## **ADULT AND PEDIATRIC GLASGOW COMA SCALE**

| <b>Feature</b>             | <b>Scale (Responses)</b>  | <b>Scale (Notation)</b> |
|----------------------------|---------------------------|-------------------------|
| <b>Eye opening</b>         | Spontaneous               | 4                       |
|                            | To speech                 | 3                       |
|                            | To pain                   | 2                       |
|                            | None                      | 1                       |
| <b>Verbal response</b>     | Oriented                  | 5                       |
|                            | Confused conversation     | 4                       |
|                            | Words (inappropriate)     | 3                       |
|                            | Sounds (incomprehensible) | 2                       |
|                            | None                      | 1                       |
| <b>Best motor response</b> | Obeys Commands            | 6                       |
|                            | Localize pain             | 5                       |
|                            | Flexion—Normal            | 4                       |
|                            | —Abnormal                 | 3                       |
|                            | Extend                    | 2                       |
|                            | None                      | 1                       |
| <b>Total Coma Score</b>    |                           | <b>3/15 – 15/15</b>     |

| <b>Glasgow Coma Scale</b>  | <b>Modified Coma Scale for Infants</b> | <b>Point Value</b>  |
|--|--|---------------------|
| <b>Eye Opening</b><br>Spontaneous<br>To Speech<br>To Pain<br>None  | Spontaneous                            | 4                   |
|  | To Speech                              | 3                   |
|  | To Pain                                | 2                   |
|  | None                                   | 1                   |
| <b>Verbal</b><br>Oriented<br>Confused<br>Inappropriate Words<br>Grunting<br>None   | Coos, babbles                          | 5                   |
|  | Irritable                              | 4                   |
|  | Cries to Pain                          | 3                   |
|  | Moans to pain                          | 2                   |
|  | None                                   | 1                   |
| <b>Motor</b><br>Follows Commands<br><br>Localizes pain<br>Withdraws to pain<br>Abnormal flexion<br>Abnormal extension<br>Flaccid | Normal spontaneous movement            | 6                   |
|  | Withdraws to touch                     | 5                   |
|  | Withdraws to pain                      | 4                   |
|  | Abnormal flexion                       | 3                   |
|  | Abnormal extension                     | 2                   |
|  | Flaccid                                | 1                   |
| <b>Total Coma Score</b>  |  | <b>3/15 – 15/15</b> |

## **APGAR SCORE**

| <b>Sign</b>                          | <b>SCORE</b>      |                             |                            |
|--------------------------------------|-------------------|-----------------------------|----------------------------|
|                                      | <b>0</b>          | <b>1</b>                    | <b>2</b>                   |
| <b>Colour</b>                        | Blue or pale grey | Pink body, blue extremities | Pink all over              |
| <b>Heartbeat</b>                     | Absent            | Less than 100 beats/minute  | More than 100 beats/minute |
| <b>Respiration</b>                   | Absent            | Slow, irregular, gasping    | Normal                     |
| <b>Grimace (response to stimuli)</b> | None              | Grimace (slight)            | Cry                        |
| <b>Activity (muscle tone)</b>        | Limp              | Some flexion of extremities | Active motion              |

## **PEDIATRIC ASSESSMENT TRIANGLE (PAT)**





## STATE OF DELAWARE MOLST FORM

|  |   |   |   |
|--|---|---|---|
| <b>HIPAA PERMITS DISCLOSURE OF MOLST TO OTHER HEALTH CARE PROVIDERS AS NECESSARY</b>   |   |   |   |
| <b>MEDICAL ORDERS for life-sustaining treatment (MOLST)</b>  |   |   |   |
| FIRST follow these orders, THEN contact physician. This is a medical order sheet based on the person's current medical condition and wishes. Any section not complete implies full treatment for that section. Everyone shall be treated with dignity and respect. |   |   |   |
| Last Name/First Name/Middle Initial _____  |   | date of birth _____/_____/_____   | Last 4 SSN # _____  |
|  |   | M <input type="checkbox"/> F <input type="checkbox"/>   | Gender  |
| <b>A</b><br><br>Check<br>One Box<br>Only   | <b>Cardiopulmonary Resuscitation (CPR): Person has no pulse and is not breathing.*</b><br><input type="checkbox"/> Attempt Resuscitation (CPR) <input type="checkbox"/> Do Not Attempt Resuscitation (DNR/No CPR)<br><i>*When person is not in cardiopulmonary arrest, follow orders in B, C, and D.</i>  |   |   |
| <b>B</b><br><br>Check<br>One Box<br>Only   | <b>Medical Interventions: Person has a pulse and/or is breathing.</b><br><input type="checkbox"/> <b>COMFORT MEASURES ONLY.</b> Use medications by any route, positioning, wound care, and other measures to relieve pain and suffering. Use oxygen, oral suctioning, and manual treatment of airway obstruction as needed for comfort. <i>Do not transfer to hospital for life-sustaining treatment. Transfer if comfort needs cannot be met in current location.</i><br><input type="checkbox"/> <b>LIMITED ADDITIONAL INTERVENTIONS.</b> Includes care described above. Use medical treatment, IV fluids, and cardiac monitor as indicated. Do not use intubation or mechanical ventilation. May use less invasive airway support (e.g. CPAP, BiPAP). <i>Transfer to hospital if indicated. Avoid intensive care.</i><br><input type="checkbox"/> <b>FULL TREATMENT.</b> Includes care described above. Use intubation, advanced airway interventions, mechanical ventilation, and cardioversion as indicated. <i>Transfer to hospital if indicated. Includes intensive care.</i><br><i>Additional Orders: (e.g. dialysis, etc.) _____</i> |   |   |
| <b>C</b><br><br>Check<br>One Box<br>Only   | <b>ANTIBIOTICS:</b><br><input type="checkbox"/> No antibiotics. Use other measures to relieve symptoms.<br><input type="checkbox"/> Determine use or limitation of antibiotics if infection occurs, with comfort as goal.<br><input type="checkbox"/> Use antibiotics if life can be prolonged.<br><i>Additional Orders: _____</i>  |   |   |
|  | <b>D</b><br><br>Check<br>One Box<br>Only  | <b>ARTIFICIALLY ADMINISTERED NUTRITION:</b><br><i>Always offer food and liquids by mouth, if feasible.</i><br><input type="checkbox"/> No artificial nutrition by tube.<br><input type="checkbox"/> Defined trial period of artificial nutrition by tube.<br>(Goal): _____<br><input type="checkbox"/> Long-term artificial nutrition by tube.<br><i>Additional Orders: _____</i> |   |
| <b>E</b>   | <b>SUMMARY OF MEDICAL CONDITION/GOALS:</b><br>_____<br>_____<br>_____   |   |   |
| <b>F</b>   | <b>SIGNATURES:</b> Preferences have been expressed to the health care provider whose signature is found below. This document reflects those preferences. If signed by a surrogate, preferences must reflect patient's wishes as best understood by the surrogate.   |   |   |
|  | Discussed with:<br><br><input type="checkbox"/> Patient <input type="checkbox"/> Parent of Minor<br><input type="checkbox"/> Legal Guardian <input type="checkbox"/> Next-of-Kin<br><input type="checkbox"/> Health Care Agent  |   | <b>PRINT – Physician/APN/PA Name</b> _____ <b>Phone #</b> _____<br>Physician/APN/PA Signature (mandatory) _____ Date _____<br>Physician Co-Signature if PA Signs Above (mandatory) _____ Date _____<br>Patient or Legal Surrogate Signature/Relationship (mandatory) _____ Date _____ |
| <b>SEND FORM WITH PERSON WHENEVER TRANSFERRED OR DISCHARGED.</b><br>Use of original form is strongly encouraged. Photocopies and FAXes of signed MOLST forms are legal and valid.  |   |   |   |